

Petrozuata ready for commercial production

Heavy *is past*

Ten years after the Letter of Intent signing that led to the PDVSA-Conoco strategic association, Venezuela is ready to sell its first barrel of synthetic crude, having successfully brought in the first of the Orinoco Belt's four projects under the form of strategic association

Violeida Guerrero

On February 13 last, with the presence of the presidents of both companies and guests from the country and abroad, the President of the Bolivarian Republic of Venezuela, Hugo Chávez Frías, inaugurated the Petrozuata installations for the upgrading of Orinoco Belt extra-heavy crude, located in the José Antonio Anzoátegui Industrial Complex at Jose, in northern Anzoátegui. The event marked the end of the project's construction stage and the start of the association's

commercial production.

This is the first of the facilities being built to upgrade Belt crude quality from 9° API to the light and medium-gravity crude range. In this way, Venezuela diversifies its crude supply to the world energy market and begins to make use of the Orinoco Belt's very considerable recoverable reserves, estimated at some 270 billion barrels of crude.

The installed capacity of the Petrozuata upgrader enables it to process 120,000 barrels per day of extra-heavy crude and produce about 104,000 daily barrels of upgraded synthetic crude,

4,000 b/d LPG, 3,000 t/d of petroleum coke and 140 t/d sulphur, the production of which has already found secure placing in the international market.

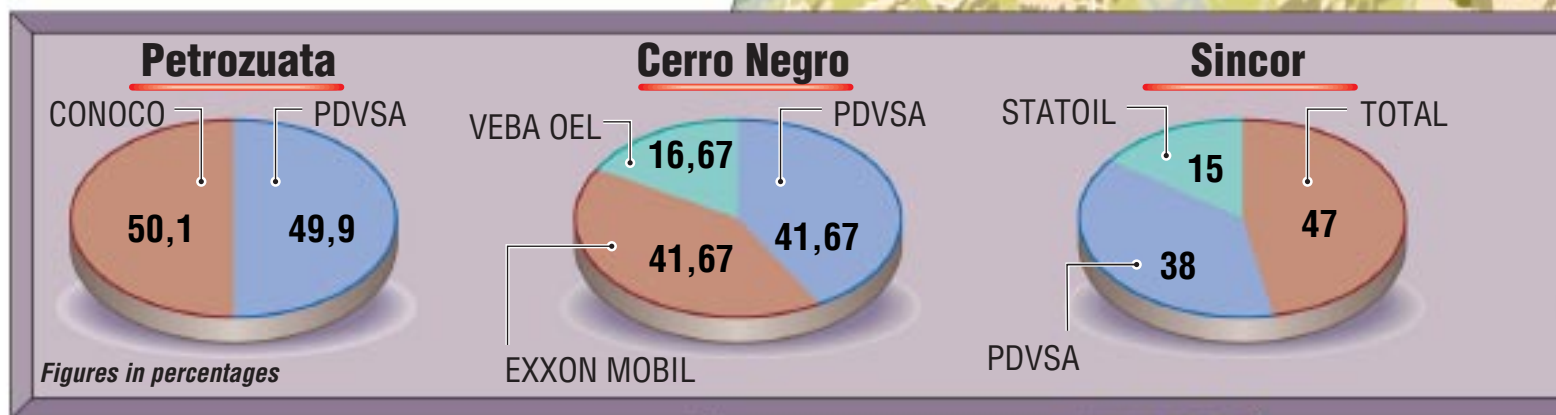
Both Guaicaipuro Lameda Montero, President of PDVSA, Conoco President Archie Dunham, and Mauricio Di Girolamo, President of Petrozuata, highlighted the significance of the event for the oil industry, since it represents the successful completion of the first of four projects being executed in Venezuela that will make the production of light/medium crudes from the extra-heavy a concrete

fact that raises the value of the enormous crude reserves lying north of the Orinoco River.

Investments

The total cost of the Petrozuata project totals some 3,076 million dollars. Financing for 1,450 million dollars was obtained in 1997, of which 450 million was provided by banks, and one billion from a market bond issue. The difference was covered by contributions from PDVSA and Conoco and the sales proceeds of crude produced during the field development





From a good intention to a synthetic barrel

The path chosen for commercial production from the Belt under the strategic association scheme began in December 1991, when a Letter of Intent was signed by Petróleos de Venezuela and Conoco to evaluate the feasibility of the project, the corresponding study being completed in August 1992. A year later, the Venezuelan Congress approved the PDVSA and Conoco strategic association, with the latter holding 50.1 percent of the shares, and PDVSA 49.9 percent.

The partners signed the association agreement in

November 1995, and in March 1996 PETROLERA ZUATA C.A., Petrozuata, was officially registered. Its mission was to produce 120,000 barrels per day of 9° API extra-heavy crude from the Orinoco Belt's Zuata region in south Anzoátegui, transport this production and upgrade it to 104,000 daily barrels of high-value synthetic crude of some 22° API.

In 1998 Petrozuata began the development of the field with an average production of 12,000 barrels per day of extra-heavy crude. At the same time, the first of the upgrading plants was being built at the Jose Industrial Complex, where the upgrading

facilities of the other three approved strategic association projects will also be built. The projects in question are Cerro Negro, Sincor and Hamaca, being undertaken by PDVSA and other partners planning to market Belt production.

Work on the industrial infrastructure and installations at Jose commenced in March 1997, and were completed last December.

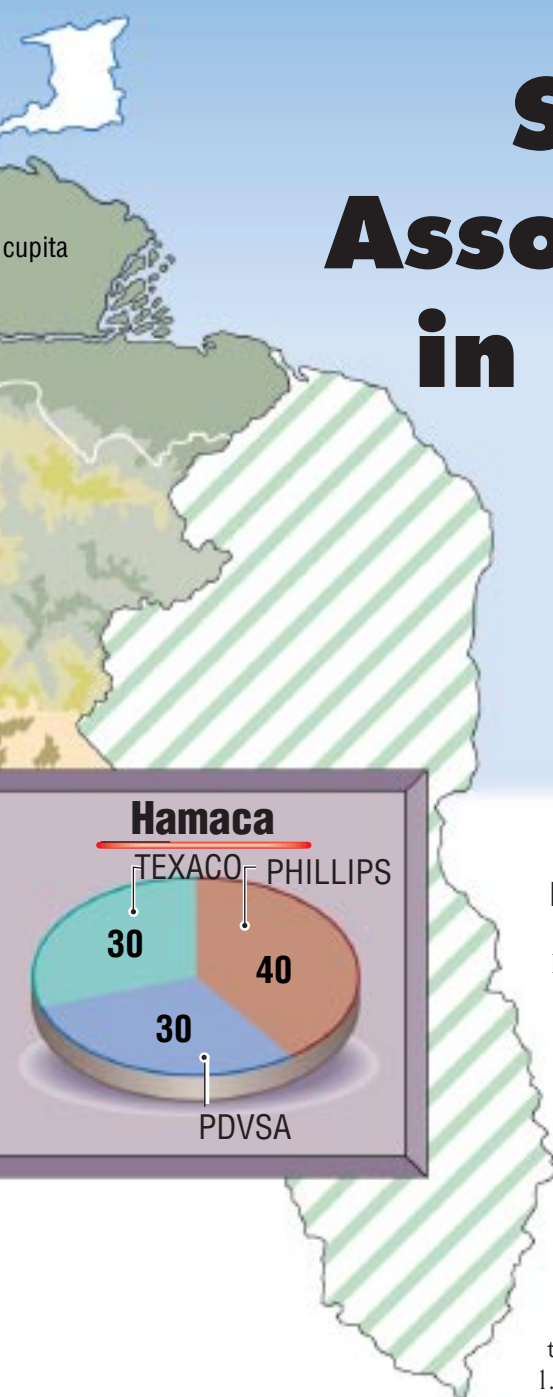
At the close of 2000, development production at Zuata -since 1998- reached 57 million barrels of extra-heavy crude, which were marketed as 16° API diluted crude, similar to Mery, obtained by blending it with Mesa crude. Synthetic crude production began at the end of January.

Synergies that produce savings

After its extraction from the Belt, the crude is diluted

Strategic Associations in the Belt

Together with these ventures, high-conversion refining installations will enable the asphalt content of the bottom of the barrel to be converted to lighter fractions and petroleum coke, producing high-quality synthetic crudes that can then be processed in plentiful conventional refineries.



at well-head with naphtha and transported to the upgrader in Jose through a 200 kilometer-long pipeline with a 36" diameter which has been in operation since August 1998. The diluent is returned through a 20" line. This same system will be used to transport the Sincor crude/diluent production, thereby achieving an important synergy that has meant investment savings in the order of 100 million dollars.

Boosting a region

The execution of the Petrozuata project has involved, besides the partners, the participation of over 2,000 national companies in the phases of engineering, materials procurement and supply of goods and services. This commercial relationship has meant an investment in the country of close to 1.5 billion dollars and the generation during the construction phase of over 7,000 direct jobs and 10,000 indirect ones. In its areas of influence, the project has had significant influence, by contributing over 6 billion bolivars in municipal taxes and a social investment in the order of 3 billion bolivars over the 1997-2000 period, boosting the development of the regions where it operates.

As part of its corporate philosophy, Petrozuata established an environmental conservation strategy directed to

promote the region's sustainable development. One of the moves in this direction was the setting up of Agroforestal Anzoátegui, a company that to date has planted 2.3 million eucalyptus trees in 2,000 hectares, and whose mission is to complete the forest development of 12,000 hectares by 2004.

The synthetic crude era begins for Venezuela

Besides Venezuela, Canada is the only other country that produces synthetic crude. In the Province of Alberta, oil shale* is used as the raw material, being obtained through a mining process not unlike that of coal production. The shale is then processed using technologies such as LC Finning and Fluid Coking, to produce synthetic crude. Canadian synthetic is processed both in domestic and U.S. refineries.

In Venezuela, the strategies to make use of the resources contained in the Orinoco Belt have been diversified into

production of diluted crude via blends, Orimulsion® production by Bitor for electricity generation, and crude upgrading through the four strategic associations currently in various stages of execution.

A little history

Knowledge of the Orinoco Belt's existence goes back to 1936, when the La Canoa No 1 well was drilled. By 1970, oil in place was estimated at some 300 million barrels. Between 1979 and 1983, Petr6leos de Venezuela, through studies produced from the shooting of 15,000 kilometers of seismic lines and the drilling of over 500 wells, determined the existence of oil in place to be in the order of 1.2 trillion barrels, making it the world's largest crude reservoir.

It is estimated that the volume of recoverable oil could be about 22 percent of the total; which is to say, some 272 billion barrels. The four projects currently underway

(*) Oil shale: clay-like rock that contains heavy hydrocarbons in solid form..

commit, during their 35-year duration, barely some 8 billion barrels, which is equivalent to 3 percent of reserves estimated as recoverable.

These enormous reserves of extra-heavy crude, however, have very particular characteristics. Their low gravity (6 to 9° API), a high sulphur content (4 to 5%) and metals (600 ppm) means they have to undergo high conversion as a previous step to their pro-

cessing in conventional light crude refineries.

Up until the 'eighties, Belt development was not competitive for PDVSA due, among other reasons, to the low prices prevalent in the market combined with a high tax rate. Other considerations were the low per-well productivity associated with the drilling and production technologies used at the time.

With the advent of strategic associations in the Belt, new production technologies were massively applied; these included: cold, simple and multilateral horizontal drilling, together with the use of submersible and multiphase pumps, which have all enabled productivity to be increased while reducing costs.

Together with these ven-

tures, high-conversion refining installations will enable the asphalt content of the bottom of the barrel to be converted to lighter fractions and petroleum coke, producing high-quality synthetic crudes that can then be processed in plentiful conventional refineries. We can, therefore, say that heavy belongs to the past, as far as the Orinoco Belt is concerned.

Petrozuata in three years

- * Field development production began only 18 months after the start of drilling.
- * *Technical Excellence Award*, a worldwide Conoco award for setting records in drilling horizontal wells and the development of multilateral drilling technologies.
- * *Conoco President Safety and Occupational Health Award for 1999* because of low accident indicators. Recognition in 2000 for accumulated time without disabling accidents: 18 million man/hours.
- * Venezuelan content 67 percent, and the inclusion of over 2,000 national companies, which translated into a direct investment of some 1.5 billion dollars in the country.
- * Regional origin of the labour force reached 95 percent, attaining a peak of 7,000 people directly employed, and 10,000 indirect ones.